WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005KY51B

Title: Pathogen and Sediment Transport in the Muddy Creek Subbasin, Kentucky River Watershed

Project Type: Research

Focus Categories: Management and Planning, Water Quality, Non Point Pollution

Keywords: watershed planning, geographic information systems, land use

Start Date: 03/01/2005

End Date: 02/28/2006

Federal Funds: $13,761

Non-Federal Matching Funds: $30,203

Congressional District: KY 6th

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Abstract

A multidisciplinary study initiated in the Muddy Creek Watershed, Madison County, Kentucky, in 2002-2003 revealed the need for turbidity and pathogen transport data from fourth-order streams, and a need for regular, systematic and longitudinal collection of water quality data in order to understand aquatic system health and the relationship between water quality and land use. The proposed investigation will build upon the interdisciplinary partnership begun in the earlier project to accomplish the following: (1) continue collection of monthly chemical and physical data at 8-16 sampling sites along Muddy Creek, (2) initiate stormflow and baseflow monitoring of turbidity and total suspended solids at three sites along a meander reach on the EKU Meadowbrook farm where a recent riparian tree planting and cattle fencing project has produced a protected region designed to reduce erosion and nutrient pollution, (3) perform discharge and

stream channel cross-section surveys at selected sites along the stream, (4) conduct monthly fecal coliform counts at multiple sampling sites to establish baseline data related to seasonal longitudinal variation in pathogenic activity; and (5) analyze the data collected using GIS spatial techniques to establish a better understanding of the land use-water quality linkage at this local scale. The project builds upon previous efforts in the Muddy Creek watershed and continues a long-term effort that employs a unique multi-stage interdisciplinary teaching-research approach that includes undergraduate students and faculty from geography, geology, and wildlife management, plus graduate biology students, in hands-on investigative research. The proposed study would continue to provide data that will be included in undergraduate classes and will be used as the basis for a Master's thesis through the Department of Earth Sciences.